

Remarks/Arguments

Status of the Application

Claims 1-21 and 26 are pending in the application pursuant to Applicants' election without traverse in response to the restriction requirement. Claims 22-25 have been withdrawn as they relate to non-elected subject matter. Claims 1-21, 26 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting over copending applications and also stand rejected under the judicially created doctrine of obviousness-type double patenting over issued U.S. patents. Claim 5 stands rejected under 35 U.S.C. §112, second paragraph. Claims 1-16, 18-21, 26 stand rejected under 35 U.S.C. §102. The Examiner has indicated that claim 17 is allowable.

Claim Rejections - Non-Statutory Obviousness-Type Double Patenting

Claims 1-21, 26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 10/109,948, claims 1-10 of copending Application No. 10/120,127, and claims 1-10 of copending Application No. 10/109,947. The Examiner has asserted that the claims of the instant application and the copending applications are not identical, but are not patentably distinct being related as genus and species thereof.

Responsive to this rejection, Applicants point out the current status of the three cited copending applications:

Application No. 10/109,947 has been abandoned.

Application No. 10/109,948 issued as U.S. Patent No. 6,642,311 on 11-04-2003.

Application No. 10/120,127 issued as U.S. Patent No. 6,551,713 on 04-22-2003.

Although this rejection is provisional, and there now appear to be no copending applications relevant to this rejection, Applicants will respond further in this paper as noted below. Applicants respond because there are two issued patents, the '311 and '713 patents cited immediately above, that may be pertinent to the Examiner's second obviousness-type double patenting rejection. Applicants respectfully request that the Examiner consider Applicants' remarks and arguments regarding the current status of the three copending applications and act as appropriate in the circumstances.

Claims 1-21, 26 are also rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,558,745, claim 1 of U.S. Patent No. 6,562,893, and claim 1 of U.S. Patent No. 6,551,712. The claims are drawn to:

(i) In the ‘893 patent, a curable coating composition in an organic solvent consisting essentially of an oligomeric binder and an oligomeric crosslinker. The binder is comprised of *n*-mers containing linear or branched cycloaliphatic moieties or mixtures thereof; polydispersity does not exceed 1.5; and the M_w of binder and crosslinker does not exceed 3,000. Functional groups attached to the moieties comprising the binder and crosslinker are matched. The binder and crosslinker components react at cure to form a highly ordered and uniform three-dimensional network.

(ii) In the ‘745 patent, a method for coating a substrate with a curable coating composition as claimed in the ‘893 patent.

(iii) In the ‘712 patent, a substrate coated with a curable coating composition as claimed in the ‘893 patent.

Applicants now turn to Application No. 10/109,948, which has issued as U.S. Patent No. 6,642,311. The claim of the ‘311 patent is drawn to:

(iv) The curable coating composition as claimed in the ‘893 patent with additional binder constituents including an acrylic polymer or polyester, a noncyclic oligomer, and an acrylic component including a core and linear stabilizer components wherein the core is substantially insoluble in the solvent medium and the stabilizers are soluble in the solvent medium.

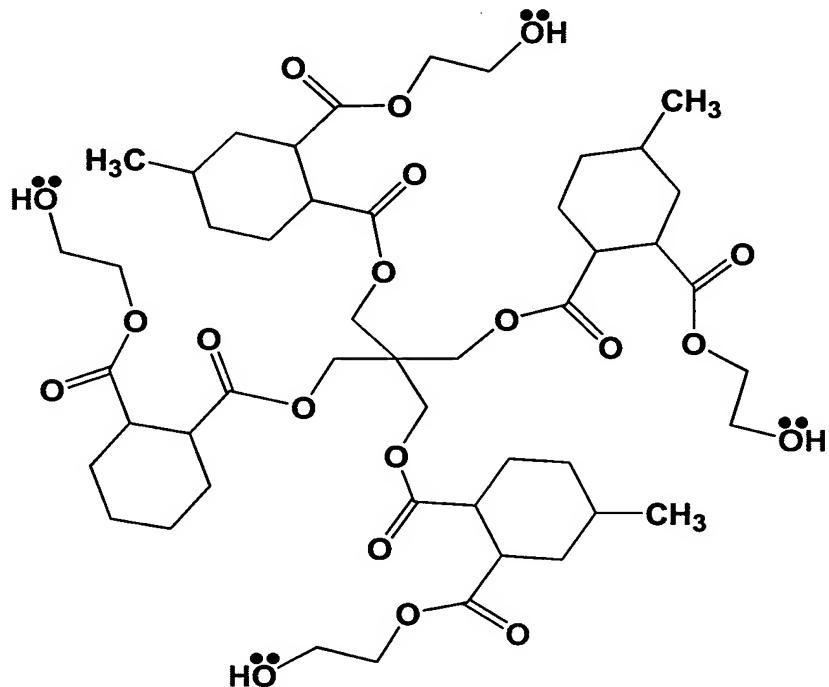
Patent Application No. 10/120,127 has issued as U.S. Patent No. 6,551,713. The claims are drawn to:

(v) A curable coating composition as claimed in the ‘893 patent, (a) where the functional groups of the binder are silane and/or hydroxyl and that of the crosslinker is isocyanate (and therefore the matched functionalities are different from those claimed in ‘893) and (b) additional constituents as in (iv), above, with functionality limitations for the noncyclic oligomer matching those of (v)(a).

It is well established that references cited in support of a non-statutory obviousness-type double patenting rejection are not prior art. Therefore, the claims of the application under examination and the claims of the references are compared to determine whether 35 U.S.C. §103(a) type obviousness exists between the claims of the pending application and those of the issued patents. This is a one-way determination. It is also established that the specifications of the references may be read to help define the scope of the claims and otherwise characterize the essence of the invention as distinctly and particularly set forth in the claims.

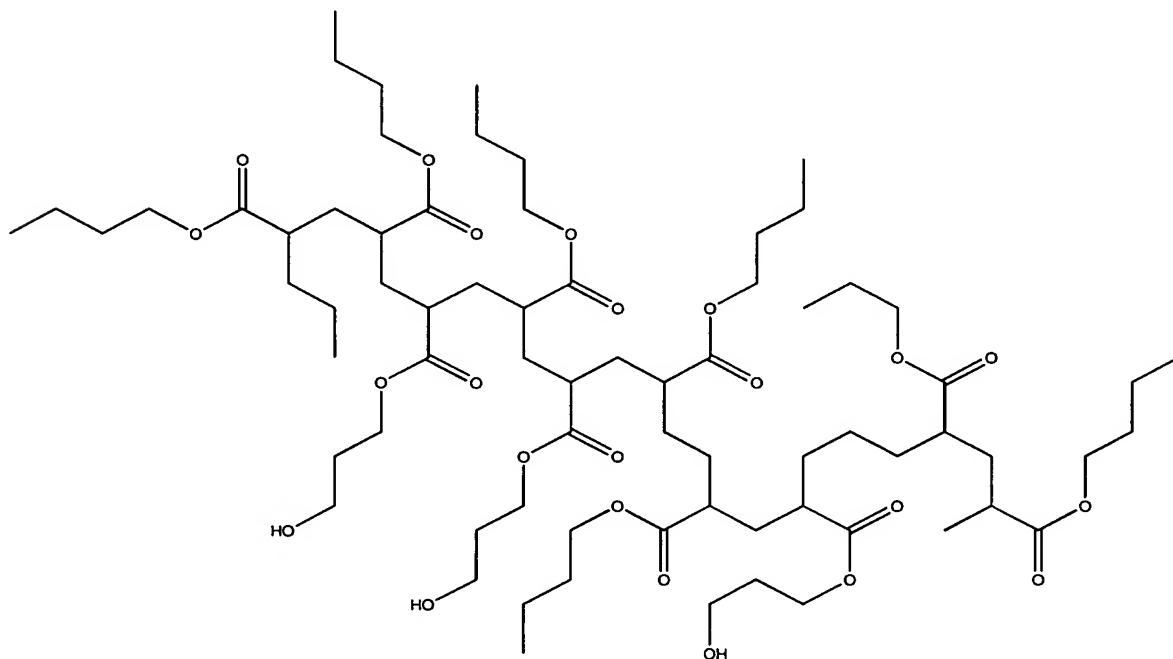
The analysis employed in an obviousness-type double patenting rejection parallels the analysis for 35 U.S.C. §103 obviousness determinations with the important distinctions noted immediately above. The essential question to be answered in this analysis is: Does any claim in the application define an invention that is merely an obvious variation of an invention claimed in the references? The answer to that question in this case, as will be shown below, is negative, and therefore, the invention claimed in the application is patentably distinct from the inventions claimed in the references.

The three references claim a curable coating composition, a method for coating a substrate, and a coated substrate; in all three, the particular curable coating composition is an essential feature of the claimed invention. The coatings of the references are comprised of oligomeric polyesters made from step-growth (condensation) polymerization reactions and the binder contains a substantial presence of hydroxyl functional groups or mixtures of hydroxyl functional groups and other groups such as epoxy, aldimine, ketimine, or silane; in one embodiment, the binder functionality is epoxy. These match with crosslinker functionalities of isocyanate or melamine in ordered sets. The binder also contains cycloaliphatic moieties such as cyclohexane, as shown in the exemplary structure below:



**Oligomeric polyesters with hydroxyl functionality exemplary
of the '893, '745 and '712 patent references.**

The Applicants herein claim a coating composition comprising crosslinkable and crosslinking components. The crosslinkable component is a copolymer having on average from 2 to 25 crosslinkable functional groups, M_w ranging from about 1,000 to 4,500, and polydispersity ranging from about 1.05 to 2.5. The copolymer is polymerized from one or more acrylate monomers without crosslinkable functional groups (non-functional monomers) and one or more methacrylate monomers containing crosslinkable functional groups (functional monomers). These molecules are made with chain growth (addition) polymerization. One of the crosslinkable functionalities is hydroxyl. An example of a polymerized (meth)acrylate with hydroxyl function of the invention is shown below:



**Polymerized (meth)acrylates with hydroxyl functionality
of the instant invention.**

The inquiry focuses upon whether a reasonably skilled practitioner of the art of designing and synthesizing performance coatings having desirable properties such as fast cure time, hardness, color durability, resistance to degradation from weather, ultraviolet light, temperature variations, scratching and marring, etc. could read the claims of the references and make non-obvious variations to arrive at the invention claimed in the application.

That would require a reasonably skilled polymer chemist to read claim 1 of the ‘893 patent and deduce, without undue experimentation, that the claimed polyesters, with all the limitations set forth in the claim, teach or suggest the polymerized (meth)acrylates of the instant application. As shown in the exemplary structures above, there is no strong similarity between the structures of the two polymers that would suggest strongly analogous properties and functions. Polymerizing a monomer, as in the ‘893 reference, does not suggest polymerizing a mixture of functional methacrylate and non-functional acrylate monomers. The presence of cyclic aliphatic moieties in the ‘893 oligomer does not teach or suggest the absence of such moieties from the polymer chain (there are ring systems in the side chains only in some of the embodiments of the instant claims). A VOC not exceeding 0.4 kg/liter (claim 1 of the ‘893 reference) does not teach or suggest a VOC range between 0.1 to 0.72 kg/liter (see, e.g., claim 7 of the instant application). Nor does a polydispersity not exceeding 1.5 (claim 1 of the ‘893 reference) teach or suggest a polydispersity ranging from about 1.05 to 2.5 (claim 1 of the application).

For the foregoing reasons, Applicants submit that claims 1-21, 26 of the application are patentably distinct from claim 1 of the ‘893 patent, claim 1 of the ‘745 patent and claim 1 of the ‘712 patent, and also patentably distinct from claim 1 of the ‘311 patent and claims 1-7 of the ‘713 patent. Accordingly, Applicants respectfully request that the Examiner withdraw this obviousness-type double patenting rejection with respect to claims 1-21, 26 of the application.

Claim Rejection – 35 U.S.C. §112

Claim 5 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner has stated that the term “non-functional” in claim 5 is considered indefinite because the monomers recited in the Markush group contain certain functional groups. The Applicants respectfully direct the Examiner’s attention to page 7, lines 1-22 of the application. The “non-functional acrylate monomer” is defined as one that can be provided with the substituent groups recited in the Markush set recited in claim 5 (page 7, lines 1-7). Examples of particular non-functional acrylate monomer species are recited on page 7, lines 8-15. Moreover, each member of the Markush group is defined as “a non-functional group” on page 32, line 25. Particular functional methacrylate monomer species are recited on page 7, lines 16-22.

The law remains that an applicant may be his own lexicographer. In this instance, the Applicants have chosen to define the acrylate monomer, which lacks crosslinkable reactive

functional groups, as a non-functional acrylate monomer. The lack of function inherent in this definition is the lack of reactivity toward a crosslinkable functional group. The methacrylate monomers, which do contain crosslinkable functional groups, is defined, by contrast, as a functional methacrylate monomer. These are precise usages, drawing a clear practical distinction between the two classes of monomers. It is submitted that these definitions are clear and precise, and satisfy the definiteness requirement of the statute.

The Applicants respectfully request that the rejection of claim 5 be withdrawn.

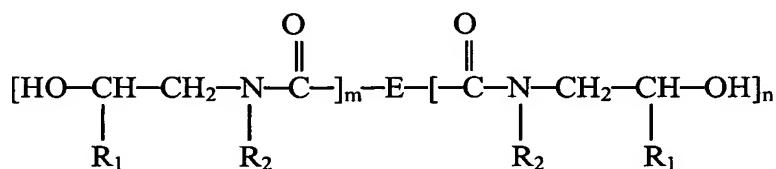
Claim Rejections – 35 U.S.C. §102

Claims 1-16, 18-21, 26 are rejected under 35 U.S.C. §102 as being anticipated by Barkac, et al., U.S. Patent No. 6,339,126. The application is directed to fast-curing performance coatings that cure at ambient or slightly elevated temperatures; Barkac is directed to a thermosetting composition (i.e., a composition that requires the influence of heat to become infusible and insoluble).

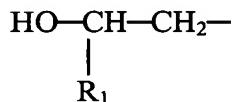
To anticipate an invention, the prior art reference must disclose *each and every* limitation of the claimed invention. Barkac does not teach or suggest using a non-functional acrylate monomer, or mixtures of them, in a copolymer, nor does Barkac teach or suggest any copolymer comprised of one or more non-functional acrylate monomers and one or more functional (meth)acrylate monomers. As used herein, “functional” means containing a crosslinkable functional group (those set forth in the application are: hydroxyl, acetoacetoxy, carboxyl, primary amine, secondary amine, epoxy); “non-functional” refers to a monomer that does not contain such crosslinkable functional groups. The Applicants claim a coating composition comprising a copolymer having an average of 2 to 25 crosslinkable groups. This limitation is contained in all pending claims. In one embodiment of the invention, claim 8, specifies that 2 to 10 of the crosslinking components are polyisocyanate. Barkac nowhere discloses acrylate or methacrylate monomers containing all of the crosslinkable functional groups recited above, nor does Barkac disclose or suggest a copolymer comprising functional monomers and non-functional monomers, or an average range of crosslinkable functional groups per copolymer. In fact, to the extent that residue G in Barkac (structures I, II, IX, X, claims 1 and 12) is functional as that term is used in this application, the only functional group taught is hydroxyl in that hydroxyl is specified as the functional substituent, or if another substituent is specified, it hydrolyzes to –OH after polymerization (see Col. 10, lines 26-45). The Examiner cites the epoxy-propyl residue (Col. 12, line 25) but Barkac teaches only that the epoxy-propyl moiety may be ϕ in structures IX and X, wherein ϕ is a terminal, non-

polymerized group. This epoxy-propyl residue is converted to a dihydroxypropyl residue. In summary, Barkac emphasizes hydroxyl groups as functional groups in the block copolymer, but does not disclose or suggest the use of a range of other functional groups, as is disclosed and claimed in the application.

The crosslinking component in the application, which has functional groups reactive to the crosslinkable functional groups, includes polyisocyanate, polyamine, ketimine, melamine, epoxy, polyacid, and combinations of these. The crosslinking agent disclosed in Barkac is a beta-hydroxyalkylamide having the general formula of structure XII,



in which R₁ is H or C₁ – C₅ alkyl, R₂ is H, C₁ – C₅ alkyl or



and E is a chemical bond or organic spacer as defined in Col. 16, lines 38-47.

Barkac does not disclose or suggest the Markush group of crosslinking agents disclosed and claimed in the application. For these reasons, Applicants assert that claims 1-16, 18-21, 26 are not anticipated by Barkac. The Applicants respectfully request that the Examiner withdraw this rejection.

Barkac, in Col. 1, line 50, recites very low volatile organic content (VOC) and Applicants, page 5, lines 11-19, claim 7, also recite a low range of acceptable VOC for the claimed coating composition. Claim 7 depends from claim 1, and therefore incorporates all of the limitations of the independent claim. To be anticipated, every limitation of claim 7, including those incorporated from claim 1, must be disclosed in Barkac. As demonstrated hereinabove, the Applicants submit that this is not the case. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection.

The Examiner has also raised a point concerning the patentability of claims 9, 18, 21. Claim 9 is directed to the coating composition of claim 1 further comprising a catalyst selected from the recited Markush group. This is clearly a product claim, adding one

additional chemical component to the composition of the invention. Therefore, the Examiner's remarks do not apply to claim 9. Claims 18 (directly) and 21 (indirectly) relate to the coating composition of claim 1, produced by free radical polymerization of the monomer mixture under recited conditions of temperature (claim 18) and reactor gage pressure (claim 21). Claims 18, 21 are actually product claims with process limitations. Applicants agree with the Examiner's assertion that patentability of these claims turns on patentability of the coating composition. As demonstrated above, the Applicants believe that the coating composition is novel, and that claims 18, 21 are therefore patentable. Therefore, Applicants believe that, having overcome the obviousness-type double patenting and novelty rejections, claims 18, 21 are allowable in their original form.

Summary

In view of the foregoing remarks and arguments, Applicants believe that the stated grounds of rejection have been overcome, and that a complete response to the Non-Final Office Action mailed April 13, 2005 has been made in this paper. Applicants believe that the application stands in condition for allowance with withdrawal of all grounds of rejection. A Notice of Allowance is respectfully solicited. If the Examiner has questions regarding the application or the contents of this response, the Examiner is invited to call the undersigned at the telephone number provided below.

The Applicants believe that the fee for a one-month extension of time for the period in which to reply, 37 C.F.R. 1.17(a)(1), is due. Please charge the extension fee to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company). Should an additional fee, not accounted for herein, be due, please charge the additional fee to the same Deposit Account.

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,



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